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Example#1

```
INCLUDE Irvine32.inc
.data

.code
main PROC
mov bl,8Fh
SHL bl,1
call dumpregs
call crlf

mov al,10000000b
SHL al,2
call dumpregs

exit
main ENDP
END main
```

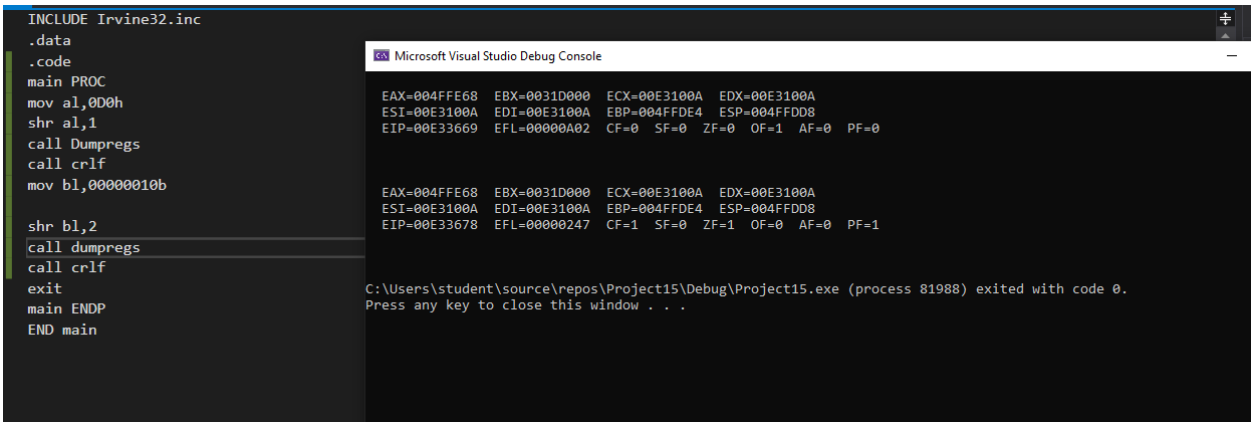
Output

```
EAX=00D3FC24  EBX=00B0301E  ECX=008D100A  EDX=008D100A
ESI=008D100A  EDI=008D100A  EBP=00D3FBD8  ESP=00D3FBCC
EIP=008D3669  EFL=00000A07  CF=1  SF=0  ZF=0  OF=1  AF=0  PF=1



EAX=00D3FC00  EBX=00B0301E  ECX=008D100A  EDX=008D100A
ESI=008D100A  EDI=008D100A  EBP=00D3FBD8  ESP=00D3FBCC
EIP=008D3678  EFL=00000A46  CF=0  SF=0  ZF=1  OF=1  AF=0  PF=1
```

Example#2



Example#3

```
INCLUDE Irvine32.inc
.data
.code
main PROC
mov bl,5
shl dl,1
call Dumpregs

exit
main ENDP
END main
```

Output’

```
EAX=00AFFE2C  EBX=00844005  ECX=0017100A  EDX=00171014
ESI=0017100A  EDI=0017100A  EBP=00AFFDE0  ESP=00AFFDD4
EIP=00173669  EFL=00000206  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=1
```

Example#4

```
INCLUDE Irvine32.inc
.data
.code
main PROC
mov al,40h
rol al,1
call dumpregs
call crlf
rol al,1
call dumpregs
call crlf
rol al,1
call dumpregs
call crlf
rol al,1
call Dumpregs
call crlf


exit
main ENDP
END main
```

Output

```
EAX=00BDFC80  EBX=00F35000  ECX=00C5100A  EDX=00C5100A
ESI=00C5100A  EDI=00C5100A  EBP=00BDFC18  ESP=00BDFC0C
EIP=00C53669  EFL=00000A46  CF=0  SF=0  ZF=1  OF=1  AF=0  PF=1


EAX=00BDFC01  EBX=00F35000  ECX=00C5100A  EDX=00C5100A
ESI=00C5100A  EDI=00C5100A  EBP=00BDFC18  ESP=00BDFC0C
EIP=00C53675  EFL=00000A03  CF=1  SF=0  ZF=0  OF=1  AF=0  PF=0


EAX=00BDFC02  EBX=00F35000  ECX=00C5100A  EDX=00C5100A
ESI=00C5100A  EDI=00C5100A  EBP=00BDFC18  ESP=00BDFC0C
EIP=00C53681  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0


EAX=00BDFC04  EBX=00F35000  ECX=00C5100A  EDX=00C5100A
ESI=00C5100A  EDI=00C5100A  EBP=00BDFC18  ESP=00BDFC0C
EIP=00C5368D  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

Example#5

```
INCLUDE Irvine32.inc
.data
.code
main PROC
mov al,01h
ror al,1
ror al,1
call writebin


exit
main ENDP
END main
```

Output

```
0000 0000 0010 1111 1111 1100 0100 0000
```

Example#6

```
INCLUDE Irvine32.inc
.data
.code
main PROC
clc
mov bl,88h
rcl bl,1
call writebin


exit
main ENDP
END main
```

Output

```
0000 0000 0100 0011 1111 1111 0100 1000
```

Example#7

```
INCLUDE Irvine32.i
.data
.code
main PROC
stc
mov ah,10h
rcr ah,1
call writebin


exit
main ENDP
END main
```

Output

```
0000 0000 1100 1111 1000 1000 0111 1100
```

Example#8

```
INCLUDE Irvine32.inc
.data
.code
main PROC
.code
mov eax,123
mov ebx,eax
shl eax,5
shl ebx,2
add eax,ebx
call writeint

exit
main ENDP
END main
```

Output

```
+4428
```

Example#9

```
INCLUDE Irvine32.inc
.code
main PROC
mov eax,0
mov ebx,0
mov al,5h
mov bl,10h
mul bl
call crlf
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=00000050  EBX=00000010  ECX=006E100A  EDX=006E100A
ESI=006E100A  EDI=006E100A  EBP=012FFC58  ESP=012FFC4C
EIP=006E367A  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

Example#10

```
INCLUDE Irvine32.inc
.data
val1 WORD 2000h
val2 WORD 0100h
.code
main PROC
mov ax,val1
mul val2
call crlf
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=012F0000  EBX=01072000  ECX=00FE100A  EDX=00FE0020
ESI=00FE100A  EDI=00FE100A  EBP=012FF86C  ESP=012FF860
EIP=00FE3677  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

Example#11

```
INCLUDE Irvine32.inc
.data

.code
main PROC
mov eax,12345h
mov ebx,1000h
mul ebx
call crlf
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=12345000  EBX=00001000  ECX=0030100A  EDX=00000000
ESI=0030100A  EDI=0030100A  EBP=008FFE10  ESP=008FFE04
EIP=00303676  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

Example#12

```
INCLUDE irvine32.inc



.code
main PROC
mov eax,0
mov ebx,0
mov edx,0
mov ax,-2
mov bx,4
imul bx

call crlf
call dumpregs
main ENDP
END main
```

Output

```
EAX=0000FFF8  EBX=00000004  ECX=00F6100A  EDX=0000FFFF
ESI=00F6100A  EDI=00F6100A  EBP=012FFC8C  ESP=012FFC80
EIP=00F63684  EFL=00000202  CF=0  SF=0  ZF=0  OF=0  AF=0  PF=0
```

Example#13

```
INCLUDE Irvine32.inc
.data
word1 SWORD 4
dword1 SDWORD 4
.code
main PROC
mov eax,0
mov ebx,0
mov ax,-4
mov bx,2
call dumpregs
imul bx,ax ;BX=-8
call dumpregs
imul bx,2 ;BX=-16
call dumpregs
imul bx,word1 ;BX=-64
mov eax,-16 ;
mov ebx,2
call dumpregs
imul ebx,eax
call dumpregs
```

```
imul bx,2 ;BX=-16
call dumpregs
imul bx,word1 ;BX=-64
mov eax,-16 ;
mov ebx,2
call dumpregs
imul ebx,eax
call dumpregs
imul ebx,2
call dumpregs
imul ebx,dword1
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=0000FFFC  EBX=0000FFF0  ECX=0090100A  EDX=0090100A
ESI=0090100A  EDI=0090100A  EBP=0077F928  ESP=0077F91C
EIP=00903689  EFL=00000286  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=1


EAX=FFFFFFF0  EBX=00000002  ECX=0090100A  EDX=0090100A
ESI=0090100A  EDI=0090100A  EBP=0077F928  ESP=0077F91C
EIP=009036A0  EFL=00000286  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=1


EAX=FFFFFFF0  EBX=FFFFFFE0  ECX=0090100A  EDX=0090100A
ESI=0090100A  EDI=0090100A  EBP=0077F928  ESP=0077F91C
EIP=009036A8  EFL=00000282  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=0


EAX=FFFFFFF0  EBX=FFFFFFC0  ECX=0090100A  EDX=0090100A
ESI=0090100A  EDI=0090100A  EBP=0077F928  ESP=0077F91C
EIP=009036B0  EFL=00000286  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=1


EAX=FFFFFFF0  EBX=FFFFFF00  ECX=0090100A  EDX=0090100A
ESI=0090100A  EDI=0090100A  EBP=0077F928  ESP=0077F91C
EIP=009036BC  EFL=00000286  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=1
```

Example#14

```
INCLUDE Irvine32.inc
.data
word1 SWORD 4
dword1 SDWORD 4
.code
main PROC
mov ebx,0
imul bx,word1,-2
call dumpregs
imul ebx,dword1,-5
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=00D9F84C  EBX=0000FFF8  ECX=0097100A  EDX=0097100A
ESI=0097100A  EDI=0097100A  EBP=00D9F800  ESP=00D9F7F4
EIP=00973672  EFL=00000282  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=0


EAX=00D9F84C  EBX=FFFFFFEC  ECX=0097100A  EDX=0097100A
ESI=0097100A  EDI=0097100A  EBP=00D9F800  ESP=00D9F7F4
EIP=0097367E  EFL=00000282  CF=0  SF=1  ZF=0  OF=0  AF=0  PF=0
```

Example#15

```
INCLUDE Irvine32.inc
.data

.code
main PROC
mov ax,0083h
mov bl,2
div bl

mov dx,0
mov ax,8003h
mov cx,100h
div cx
call dumpregs
exit
main ENDP
```

Output

```
EAX=008F0080  EBX=00697002  ECX=00F20100  EDX=00F20003
ESI=00F2100A  EDI=00F2100A  EBP=008FFAA4  ESP=008FFA98
EIP=00F2367C  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1
```

Example#16

```
INCLUDE Irvine32.inc
.data

.code
main PROC
.data
byteVal SBYTE -101
.code
mov al,byteVal
cbw
call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=008F0080  EBX=00697002  ECX=00F20100  EDX=00F20003
ESI=00F2100A  EDI=00F2100A  EBP=008FFAA4  ESP=008FFA98
EIP=00F2367C  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1
```

Example#17

```
INCLUDE Irvine32.inc

.data
wordVal SWORD -101 ; FF9Bh
.code
main PROC
mov ax,wordVal
cwd

call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=00B5FF9B  EBX=0095D000  ECX=0048100A  EDX=0048FFFF
ESI=0048100A  EDI=0048100A  EBP=00B5FD8C  ESP=00B5FD80
EIP=0048366D  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1
```

Example#18

```
INCLUDE Irvine32.inc

.data
wordVal SWORD -101 ;
.data
dwordVal SDWORD -101 ; FFFFFF9Bh
.code
main PROC
mov eax,dwordVal
cdq

call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=FFFFFF9B  EBX=00DC5000  ECX=00B4100A  EDX=FFFFFFFF
ESI=00B4100A  EDI=00B4100A  EBP=00A5F96C  ESP=00A5F960
EIP=00B4366B  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1
```

Example#19

```
INCLUDE Irvine32.inc

.data
byteVal SBYTE -48 ; D0 hexadecimal
.code
main PROC
mov al,byteVal
cbw
mov bl,+5
idiv bl


call dumpregs
exit
main ENDP
END main
```

Output

```
EAX=009DFDF7  EBX=00AE3005  ECX=0004100A  EDX=0004100A
ESI=0004100A  EDI=0004100A  EBP=009DFB58  ESP=009DFB4C
EIP=00043670  EFL=00000246  CF=0  SF=0  ZF=1  OF=0  AF=0  PF=1
```

Task#1

```
INCLUDE Irvine32.inc

.data

.code
main PROC
mov eax,5
mov ebx,eax
mov edx,ebx
shl eax,4
shl ebx,2
shl edx,0
add eax,ebx
add eax,edx


call writeint
exit
main ENDP
END main
```

Output